

Fact Sheet Date: March 12, 1998

**NEW YORK STATE
- HUMAN HEALTH FACT SHEET -**

**Ambient Water Quality Value for
Protection of Sources of Potable Water**

SUBSTANCE: Dechlorane Plus

CAS REGISTRY NUMBER: 13560-89-9

AMBIENT WATER QUALITY VALUE: 5 ug/L

BASIS: Principal Organic Contaminant (Groundwater)

Principal Organic Contaminant Classes (Surface Water)

SUMMARY OF INFORMATION

Introduction

Dechlorane Plus ($C_{18}H_{12}Cl_{12}$), a halogenated non-aromatic cyclic hydrocarbon, is a white, odorless powder used as a flame retardant in plastics.¹ It has a molecular weight of 653.7 and is reported to be essentially insoluble in water (about 44-572 ng/L).² Its vapor pressure has been reported to be 0.006 mm Hg at 200°C.¹ The photolysis half-life in water is estimated to be greater than 24 years; the oxidation half-life in water is estimated to be 2100 years.² No information was found on taste and odor thresholds of Dechlorane Plus in water.²

Pharmacokinetics

Limited oral exposure studies in rats with radiolabeled Dechlorane Plus suggest that very little of the administered compound is absorbed by the gastrointestinal tract. Data indicate that about 95% of radiolabeled material was excreted in the feces within 24 hours.² The remaining radiolabeled portion was retained in tissues (liver, blood and kidney) and was expected to be excreted slowly. Although metabolic products were not characterized, limited liver analysis showed evidence of radiolabeled metabolite.

Acute Toxicity

The data on human or animal effects of exposure to Dechlorane Plus are limited. Inhalation of Dechlorane Plus dust by humans may cause irritation of the respiratory tract.¹ Dechlorane Plus did not produce eye irritation in rabbits subjected to Draize test.³

The oral rat LD₅₀ has been reported to be greater than 25 g/kg. The dermal rabbit LD₅₀ has been reported to be greater than 8 g/kg. An inhalation LC₅₀ in rats (4 hrs) has been reported to be greater than 2250 mg/m³.⁴

Chronic Toxicity

No information was found on the chronic toxicity of Dechlorane Plus. However, a number of subchronic studies^{5,6,7} were conducted for Hooker Chemical Corporation by Industrial Bio-Test Laboratories, Inc. (IBT) in 1975. These studies (summarized below) cannot be accorded full confidence because the veracity of other studies conducted by IBT during the same period have been questioned by scientific peer review.

Charles River albino rats were fed diets containing 0; 10,000; 30,000 or 100,000 ppm Dechlorane Plus for 90 days.⁵ No treatment-related effects on behavior, hematology, clinical blood chemistry, urinalysis or pathology were reported. Increases in absolute liver weight, liver to body weight ratio and liver to brain weight ratio were noted in the high dose group.

Charles River albino rats were exposed to the dust of Dechlorane Plus for 6 hours per day, 5 days per week for 4 weeks, at concentrations of either 0, 0.6 or 1.6 g/m³.⁶ Increases of liver weight and lung weight were reported at both exposure levels. Histopathological examinations revealed a variety of hepatotoxic effects and increased numbers of alveolar macrophages in the lungs of the exposed animals.

Albino rabbits were exposed dermally to Dechlorane Plus at concentrations of 500 or 2000 mg/kg for 5 days per week for 4 weeks.⁷ No treatment-related effects were noted with the exception of slight erythema in several animals.

Reproductive/Developmental Toxicity

No information was found.

Genotoxicity

No information was found.

Oncogenicity

No information was found.

Current Standards and Guidelines

Under the State Sanitary Code (10 NYCRR Part 5, Public Water Supplies), the New York State Department of Health has established a maximum contaminant level of 5 ug/L for "Principal Organic Contaminants" such as Dechlorane Plus in drinking water.⁸

DERIVATION OF VALUE

Groundwater

Dechlorane Plus is a principal organic contaminant with a maximum contaminant level of 5 ug/L under New York State Department of Health regulations as described above. The ambient groundwater standard for Dechlorane Plus is 5 ug/L because former groundwater regulations included 10 NYCRR Subpart 5-1 general standards by reference.

Surface Water

Dechlorane Plus belongs to one of the principal organic contaminant classes as defined in 6NYCRR 700.1. The most stringent value that can be derived for this substance using the procedures in 6NYCRR 702.3 through 702.7 is 5 ug/L, required under 702.3(b) for substances belonging to any principal organic contaminant class. Therefore, the ambient surface water quality value for Dechlorane Plus is 5 ug/L.

REFERENCES

Material Safety Data Sheet. 1988. Dechlorane Plus 515, The Flametamer. Occidental Chemical Company. MSDS No. M7749.

SRI International. 1979. Metabolism and Environmental Screening Studies on Dechlorane Plus. Prepared for Hooker Research Center. Grand Island, N.Y.

Food and Drug Research Laboratories, Inc. 1971. Dechlorane Plus Rabbit Eye Irritation Study. IBL No. 9039.

U.S. Department of Health and Human Services. 1987. Registry of Toxic Effects of Chemical Substances (RTECS), 1985-86 Edition, Volume 2. D.V. Sweet, ed. Washington, DC: U.S. Government Printing Office. P.2025.

Industrial Bio-Test Laboratories, Inc. 1975. 90-Day Subacute Oral Toxicity Study with Dechlorane Plus 25 in Albino Rats. IBT No. 622-06273.

Industrial Bio-Test Laboratories, Inc. 1975. 28-Day Subacute Dust Inhalation Toxicity Study with Dechlorane Plus 25 in Rats. IBT No. 663-06279.

Industrial Bio-Test Laboratories, Inc. 1975. 28-Day Subacute Dermal Toxicity Study with Dechlorane Plus 25 in Albino Rabbits. IBT No. 601-06280.

10 NYCRR Part 5, Drinking Water Supplies (Statutory Authority: Public Health Law Section 225). Subpart 5-1. January, 1989. New York State Department of Health.

SEARCH STRATEGY

The following reference sources were reviewed:

- Index Medicus, 1981 - Feb. 1991.
- Chemical Abstracts, 1979-1988.
- The following databases through 3/91: Toxline, Toxlit 65 and Toxlit, Chemline, and Hazardous Substances Data Bank (HSDB).
- U.S. Environmental Protection Agency. 1991. Integrated Risk Information System (IRIS) Database. Washington, DC: Office of Health and Environmental Assessment. (March 1, 1991).
- National Research Council. Drinking Water and Health, Volumes 1-9. Safe Drinking Water Committee, Board on Toxicology and Environmental Health Hazards, Commission on Life Sciences. Washington, DC: National Academy Press.
- International Agency for Research on Cancer (IARC). IARC Monographs on the Evaluation of the Carcinogenic Risk of Chemicals to Humans. Volumes 1-47. Lyon, France: IARC.

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